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Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER	
ROSARIO, DENNIS	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/016,601	LUO ET AL.	
	Examiner	Art Unit	
	Dennis Rosario	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23 and 25-33* is/are rejected.

7)☒ Claim(s) *24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/10/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on February 10, 2005. Claims 1-33 are pending.

Response to Arguments

2. Applicant's arguments filed 2/10/2005 have been fully considered but they are not persuasive.

On page 9 of the remarks that states, "In Claim 1, unlike Savakis, the belief map for an image has multiple values." However, Savkis discloses the limitation of the belief map for an image has multiple values as shown in fig. 9,num. S212: BELIEF MAP that has multiple values via the process of num. S210 as shown in fig. 9, numerals S208a and S208b.

On page 9 of the remarks that states, "Claim 1 requires a belief map of values indicating the degree of belief that pixels in the image belong to target subject matter." However, Savakis discloses a belief map (Shown in fig. 9, num. S212: BELIEF MAP) of values (Shown in fig. 9, num. S212: BELIEF MAP of values S208a and S208b of fig. 9.) indicating the degree of belief (Shown in fig. 9, num. S212: BELIEF MAP of values S208a and S208b of fig. 9 where numeral S208b indicates the degree or belief or "features which are likely to be part [of an image](col. 17, line 29).")...

... that pixels in the image (Shown in fig. 9, num. S212: BELIEF MAP of values S208a and S208b of fig. 9 where numeral S208b indicates the degree or belief or "features which are likely to be part [of an image](col. 17, line 29)" that "pixels" in col. 18, line 19, which correspond to the previously mentioned features, in the image as shown in fig. 9,num.S200: SCENE) belong to target subject matter (Shown in fig. 9, num. S212: BELIEF MAP of values S208a and S208b of fig. 9 where numeral S208b indicates the degree or belief or "features which are likely to be part [of an image](col. 17, line 29)" that "pixels" in col. 18, line 19, which correspond to the previously mentioned features, in the image as shown in fig. 9,num.S200: SCENE belong to the target "main subject" in col. 18, line 20 matter.).

3. Applicant's arguments, see amendment, page 10 states, "Claim 1 in applying image enhancement to the digital image varies the control signal pixel by pixel according to the belief map." filed 2/10/2005, with respect to claim 1 have been fully considered and are persuasive. The rejection of claim 1 has been withdrawn.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 26 and 28 are rejected under the judicially created doctrine of double patenting over claim 6 of U. S. Patent No. 6,891,977 B2 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

Claim 1, step c) of the instant application has the phrase “control signal” which corresponds to claim 1, step c), line 2: “gain values” of the ‘977 patent for controlling the degree of image enhancement as claimed which corresponds to “indicate the degree of sharpening” in claim 1, step c), line 3.

Claim 1, step d), line 2 has the phrase "varying the control signal pixel by pixel" corresponds to claim 6, lines 3-5: "the gain value of the pixel in the map...is greater than...N..." where the gain value is the control signal that varies since it is greater than N for a pixel then another pixel of "gain values of pixels" is determined to be greater than N.

Claims 26 and 28 are rejected the same as claim 7. Thus, argument similar to that presented above for claim 1 is equally applicable to claims 26 and 28.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> **Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.**

7. Claim 25 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Currently, claim 25 reads on any object with a computer program product such as a page from a book to a program on a disk. The proposed amendment limits the object to a computer readable medium.

Claim 25 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 25 is drawn to functional descriptive material NOT claimed as residing on a computer readable medium. MPEP 2106.IV.B.1(a) (Functional Descriptive Material) states:

"Data structures not claimed as embodied in a computer-readable medium are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer."

"Such claimed data structures do not define any structural or functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized."

Claim 25, while defining a program product does not define a "computer-readable medium" and is thus non-statutory for that reasons. A program product can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" in order to make the claim statutory.

"In contrast, a claimed computer-readable medium encoded with the data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory." - MPEP 2106.IV.B.1(a)

Claim 25 ought to be amended to:

A computer **readable** program product **stored on a computer readable medium** for performing the method of claim 1.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 1,3,10-14,19-21,23,25-30 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated- by Qian (US Patent 6,707,940 B1).

Regarding claim 1, Qian discloses a method for processing a digital image (fig. 4, label: original image), comprising the steps of:

a) providing a subject matter detector (Fig. 4,num. 300: image segmenter is a provided subject matter detector that detects via a "classification" in col. 4, line 34 an "object" in col. 4, line 26 as subject matter.) for distinguishing between target and background subject matters (Fig. 4,num. 300: image segmenter is a provided subject matter detector that detects via a "classification" in col. 4, line 34 an "object" in col. 4, line 26 as subject matter and for distinguishing between target or "object pixels" in col. 4, line 29 and background subject matters or "background pixels" in col. 4, line 29.);

b) applying the subject matter detector (Fig. 4, num. 300: image segmenter is applied via an input arrow.) to the image (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4.) to produce a belief map (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4 to produce a belief map or "segmentation map" as shown in fig. 4.) of values (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4 to produce a belief map or "segmentation map" in col. 4, line 27 and shown in fig. 4 of values or "pixels of value" in col. 4, line 28.) indicating the degree of belief (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4 to produce a belief map or "segmentation map" in col. 4, line 27 and shown in fig. 4 of values or "pixels of value" in col. 4, line 28 indicating the degree of belief or "probability" in col. 4, line 35.)...

... that pixels in the image (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4 to produce a belief map or "segmentation map" in col. 4, line 27 and shown in fig. 4 of values or "pixels of value" in col. 4, line 28 indicating the degree of belief or "probability" in col. 4, line 35 that "object pixels" in col. 4, line 29 in the original image.) belong to target subject matter (Fig. 4, num. 300: image segmenter is applied via an input arrow to the original image as shown in fig. 4 to produce a belief map or "segmentation map" in col. 4, line 27 and shown in fig. 4 of values or "pixels of value" in col. 4, line 28 indicating the degree of belief or "probability" in col. 4, line 35 that "object pixels" in col. 4, line 29 in the original image belong or "correspond" in col. 4, line 29 to target subject matter or "predetermined object" in col. 4, line 26.);

c) providing an image enhancement operation (Fig. 4,num. 400: image smoother is a provided image enhancement operation.) that is responsive to a control signal (Fig. 4,num. 400: image smoother is a provided image enhancement operation that is responsive to a control signal as shown in fig. 3, diamond label: "x=X?".) for controlling the degree of image enhancement (Fig. 4,num. 400: image smoother is a provided image enhancement operation that is responsive to a control signal as shown in fig. 3, diamond label: "x=X?" for controlling the "degree of [image enhancement or] smoothing" in col. 3, line 60 via "iterations" in col. 3, line 59 using the control signal as shown in fig. 3, diamond label: "x=X?" where X determines the number of iterations.); and

d) applying image enhancement operation (Fig. 4, num. 400: image smoother is applied via an input arrow.) to the digital image (Fig. 4, num. 400: image smoother is applied via an input arrow to the digital image or original image as shown in fig. 4 via a segmentation map of fig. 4. Note that the segmentation map contains a "version of an image" in col. 4, line 23 or a version of the original image.) by varying the control signal (Fig. 4, num. 400: image smoother is applied via an input arrow to the digital image or original image as shown in fig. 4 via a segmentation map of fig. 4 by varying the control signal using the diamond of fig. 3, label: "x=X?" where x has a variable "range of x" in col. 3, line 42.) pixel by pixel (Fig. 4, num. 400: image smoother is applied via an input arrow to the digital image or original image as shown in fig. 4 via a segmentation map of fig. 4 by varying the control signal using the diamond of fig. 3, label: "x=X?" where x has a variable "range of x" in col. 3, line 42 where x corresponds to "pixel by pixel operation" in col. 4, line 21.) according to the belief map (Fig. 4, num. 400: image smoother is applied via an input arrow to the digital image or original image as shown in fig. 4 via a segmentation map of fig. 4 by varying the control signal using the diamond of fig. 3, label: "x=X?" where x has a variable "range of x" in col. 3, line 42 where x corresponds to a "pixel by pixel operation" in col. 4, line 21 according to the belief map or segmentation map.) to produce an enhanced image.

Regarding claim 3, Qian discloses the method claimed in claim 1, wherein a plurality of image enhancement operations are provided (Qian provides a plurality of image enhancement operations or "filtering techniques" in col. 6, line 24 that stabilize a pixel due to noise as mentioned in col. 6, lines 6-27.), and further comprising the step of selecting one or more of the provided image enhancement operations (Qian provides a plurality of image enhancement operations or "filtering techniques" in col. 6, line 24 where "one or more filtering techniques [are applied] (col. 6, line 24)".).

Regarding claim 10, Qian discloses the method claimed in claim 1, wherein the image enhancement operation (Fig. 4, num. 400: image smoother.) is noise reduction (Fig. 4, num. 400: image smoother "may eliminate...noise" in col. 3, line 64.).

Regarding claim 11, Qian discloses the method claimed in claim 1, wherein the image enhancement operation (Fig. 4, num. 400: image smoother.) is tone scale adjustment (Fig. 4, num. 400: image smoother adjusts the pixel value to a new pixel value as mentioned in col. 2, lines 65,66.).

Regarding claim 12, Qian discloses the method claimed in claim 1, wherein the image enhancement operation (Fig. 4, num. 400: image smoother.) is scene balance adjustment (Fig. 4, num. 400: image smoother provides a smoothed image to pixel stabilizer 600 of fig. 8 which stabilizes or balances a pixel of a scene.).

Claim 13 is rejected the same as claim 11. Thus, argument similar to that presented above for claim 11 is equally applicable to claim 13.

Regarding claim 14, Qian discloses the method claimed in claim 1, wherein the image enhancement operation is JPEG de-blocking (Fig. 4, num. 400: image smoother provides a smoothed image to pixel stabilizer 600 of fig. 8 which stabilizes a pixel of a scene due to JPEG de-blocking or "transmission line noise" in col. 6, line 11.

Regarding claim 19, Qian discloses the method claimed in claim 1, wherein the control signal (The control signal as shown in fig. 3, diamond label: "x=X?") is varied (The control signal as shown in fig. 3, diamond label: "x=X?" is varied where x has a variable "range of x" in col. 3, line 42.) in accordance to the belief map (The control signal as shown in fig. 3, diamond label: "x=X?" is varied where x has a variable "range of x" in col. 3, line 42 in accordance to the belief map or segmentation map which is represented as a 3 X 3 array that is inputted into filter 100 as shown in fig. 1 and fig. 3, label: "filter 100".) and to a signal related to the sizes of regions (The control signal as shown in fig. 3, diamond label: "x=X?" is varied where x has a variable "range of x" in col. 3, line 42 in accordance to the belief map or segmentation map which is represented as a 3 X 3 array that is inputted into filter 100 as shown in fig. 1 and fig. 3, label: "filter 100" and to a signal "p(x+u, y+v)" as shown in fig. 3 where "u" and "v" are related to sizes of regions of the 3 X 3 array.) within the belief map.

Claim 20 is rejected the same as claim 19. Thus, argument similar to that presented above for claim 19 is equally applicable to claim 20.

Regarding claim 21, Qian discloses the method claimed in claim 1, wherein the control signal is varied in accordance to the belief map (The control signal as shown in fig. 3, diamond label: "x=X?" is varied where x has a variable "range of x" in col. 3, line 42 in accordance to the belief map or segmentation map which is represented as a 3 X 3 array that is inputted into filter 100 as shown in fig. 1 and fig. 3, label: "filter 100".) and a scalar derived from an analysis of the belief map (The control signal as shown in fig. 3, diamond label: "x=X?" is varied where x has a variable "range of x" in col. 3, line 42 in accordance to the belief map or segmentation map which is represented as a 3 X 3 array that is inputted into filter 100 as shown in fig. 1 and fig. 3, label: "filter 100" and a scalar or "X" of the "x=X?" diamond derived from an analysis of the belief map or segmentation map by "padding" in col. 3, line 46 the map "as desired" in col. 3, line 47. Thus, the segmentation or belief map can be padded in any desired fashion where the word desired is a form of an analysis.).

Regarding claim 23, Qian discloses the method claimed in claim 1, further comprising:

a) the step of analyzing (Fig. 3, label : input values...to filter 100 is a step of analyzing or "con-siders" in col. 3, lines 55,56.) the belief map (Fig. 3, label : input values...to filter 100 is a step of analyzing or "con-siders" in col. 3, lines 55,56 the belief map or segmentation map as shown in fig. 3 as a 3 x 3 array of squares.) to generate the control signal (Fig. 3, label : input values...to filter 100 is a step of analyzing or "con-siders" in col. 3, lines 55,56 the belief map or segmentation map as shown in fig. 3 as a 3 x 3 array of squares to generate the control signal in a succeeding step shown in fig. 3 as a diamond label, "x=X?".).

Regarding claim 25, Qian discloses a computer program product ("program" in col. 6, line 51) for performing the method of claim 1.

Claim 26 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 26.

Regarding claim 27, Qian discloses the method of claim 1 wherein said values (The values or "pixels of value" in col. 4, line 28.) indicate more than two different degrees of belief (The values or "pixels of value" in col. 4, line 28 or "The value" in col. 4, line 33 indicate more than two different degrees of belief using "a...probability...from 0 to 255 (col. 4, line 35)".) that respective pixels (The values or "pixels of value" in col. 4, line 28 or "The value" in col. 4, line 33 indicate more than two different degrees of belief using "a...probability...from 0 to 255 (col. 4, line 35)" that respective or "corresponding" in col. 4, line 37 pixels.) in the image (The values or "pixels of value" in col. 4, line 28 or "The value" in col. 4, line 33 indicate more than two different degrees of belief using "a...probability...from 0 to 255 (col. 4, line 35)" that respective or "corresponding pixels" in col. 4, line 37 in the "two images" in col. 4, lines 37,38 where one image is of the original image of fig. 4.) belong to target subject matter (The values or "pixels of value" in col. 4, line 28 or "The value" in col. 4, line 33 indicate more than two different degrees of belief using "a...probability...from 0 to 255 (col. 4, line 35)" that respective or "corresponding pixels" in col. 4, line 37 in the "two images" in col. 4, lines 37,38 where one image is of the original image of fig. 4 so that "each pixel in the original image...belong[s] to the foreground [or target subject matter](col. 5, lines 35,36).").

Regarding claim 28, Qian discloses a method for processing a digital image, comprising the steps of:

a) automatically assigning one of three or more different belief values to each of the pixels of the image (Fig. 5,num. P130: apply mapping function Φ automatically assigns one of three or more different belief values "from 0 to 1" in col. 5, line 25 "for each pixel in the original image" in col. 5, line 35.), said belief values (The belief values from 0 to 1. Note that the claimed automatically corresponds to the flow process of fig. 5, which requires no human intervention.) each indicating the degree of belief (The belief values from 0 to 1 each indicate a degree of belief or "probability" in col. 5, line 24.) that the respective pixel in the image (The belief values from 0 to 1 each indicate a degree of belief or "probability" in col. 5, line 24 that the respective pixel of the original image.) belongs to target subject matter (The belief values from 0 to 1 each indicate a degree of belief or "probability" in col. 5, line 24 that the respective pixel of the original image "belong[s] to the foreground" in col. 5, line 36.); and

b) automatically enhancing each of the pixels of the digital image (Fig. 4, num. 400: image smoother automatically enhances each of the pixels of the digital image. Note that the segmentation map contains a "version of an image" in col. 4, line 23 or a version of the original image and the claimed automatically corresponds to the flow process of fig. 4, which requires no human intervention)...

... to produce an enhanced image (Fig. 4, num. 400: image smoother automatically enhances each of the pixels of the digital image. Note that the segmentation map contains a "version of an image" in col. 4, line 23 or a version of the original image to produce an enhanced image as represented by an output arrow of fig. 4,num. 400: image smoother.), said enhancing varying in degree (Fig. 4,num. 400: image smoother outputs a "degree of [image enhancement or] smoothing" in col. 3, line 60.), pixel by pixel (Fig. 4,num. 400: image smoother outputs a "degree of [image enhancement or] smoothing" in col. 3, line 60, using a center pixel, p(x,y) as shown in fig. 1 and pixel (p(x+1,y) as another center pixel as mentioned in col. 3, lines 40-42.), in accordance with respective said belief values (Fig. 4,num. 400: image smoother outputs a "degree of [image enhancement or] smoothing" in col. 3, line 60.), pixel by pixel (Fig. 4,num. 400: image smoother outputs a "degree of [image enhancement or] smoothing" in col. 3, line 60, using a center pixel, p(x,y) as shown in fig. 1 and pixel (p(x+1,y) as another center pixel as mentioned in col. 3, lines 40-42, in accordance with respective said belief values "from 0 to 1" in col. 5, line 25 generated from fig. 4, num. 300: image segmenter.).

Regarding claim 29, Qian discloses the method of claim 28 wherein said assigning is based upon color ("multicomponent values" in col. 4, line 10) and texture features ("area" in col. 4, line 26 is a feature of texture.).

Regarding claim 30, Qian discloses the method claimed in claim 28, further comprising:

a) making a belief map (Fig. 5 outputs a "classification probability map" in col. 5, lines 34,35) of said belief values (Fig. 5 outputs a "classification probability map" in col. 5, lines 34,35 and shown in fig. 4 as a "segmentation map" of said belief values "from 0 to 1" in col. 5, line 25.);

b) analyzing said belief map (An analysis of the belief map or segmentation map is performed by "padding" in col. 3, line 46 the map "as desired" in col. 3, line 47. Thus, the segmentation or belief map can be padded in any desired fashion where the word desired is a form of an analysis.) to provide an analysis result; and

c) wherein said enhancing (Fig. 4, num. 400: image smoother) varies (Fig. 4, num. 400: image smoother can "achieve a higher degree of smoothing" in col. 4, lines 8,9.) in accordance with said belief map(Fig. 4, num. 400: image smoother can "achieve a higher degree of smoothing" in col. 4, lines 8,9 in accordance with said belief map or segmentation map of fig. 4.) and said analysis result (Fig. 4, num. 400: image smoother can "achieve a higher degree of smoothing" in col. 4, lines 8,9 in accordance with said belief map or segmentation map of fig. 4 and said analysis result or padding operation.).

Claim 33 is rejected the same as claim 3. Thus, argument similar to that presented above for claim 3 is equally applicable to claim 33.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 2,4,5-8,17,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian (US Patent 6,707,940 B1) in view of Jamzadeh (US Patent 5,889,578 A).

Regarding claim 2, Qian does not teach the limitation of claim 2, but does teach a segmenter that distinguishes between foreground and background objects which does suggest at least two detectors that detect the foreground and background objects; however, Oian does not teach the limitation of selecting.

Jamzadeh does teach a segmenter as shown in fig. 7, label "MEASURE & COMPARE PERIPHERAL REGIONS DENSITIES VS. CENTRAL REGIONS DENSITIES" that include two detectors labeled "OUTDOOR SCENE" and "IN-DOOR SCENE" as suggested by Qian and teaches the limitation of claim 2 of:

A method, wherein a plurality of subject matter detectors are provided (Figure 9 label: "PEOPLE (PERSON)," and "OBJECTS CAR, HOUSE, ETC." are provided detectors.), and further comprising the step of selecting one or more of the provided subject matter detectors (Figure 9 label: "PEOPLE (PERSON)," and "OBJECTS CAR, HOUSE, ETC." are provided detectors that are "select[ed]" in col. 8, line 20 which corresponds to the processing of fig. 7.).

Regarding claim 31, Qian teaches the method claimed in claim 28, further comprising:

a) selecting one or more of a plurality of subject matter detectors and using said one or more subject matter detectors (One subject matter detector is used as shown in fig. 4, num. 300: image segmenter.) to produce said belief values (One subject matter detector is used as shown in fig. 4, num. 300: image segmenter to produce said belief values.); however, Qian does not teach the preceding limitation of selecting one or more of a plurality of subject matter detectors, but does teach a segmenter that distinguishes between foreground and background objects which does suggest at least two detectors that detect the foreground and background objects.

Jamzadeh does teach a segmenter as shown in fig. 7, label "MEASURE & COMPARE PERIPHERAL REGIONS DENSITIES VS. CENTRAL REGIONS DENSITIES" that include two detectors labeled "OUTDOOR SCENE" and "IN-DOOR SCENE" as suggested by Qian and teaches the limitation not taught by Qian in claim 31 of:

a) selecting one or more of a plurality of subject matter detectors (as shown in fig. 7, label: MEASURE & COMPARE PERIPHERAL REGIONS DENSITIES VS. CENTRAL REGION DENSITIES that selects either subject matter detector COMPUTE COLOR HISTOGRAMS OF THE PERIPHERAL REGIONS or subject matter detector COMPUTE COLOR HISTOGRAMS OF THE CENTERAL REGIONS.)

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian's segmenter of fig. 4,num. 300 with Jamzadeh's teaching of figure 7 that is based upon a selection, because Jamzadeh's teaching identifies a "target image.... quickly and with...accuracy (col. 8, lines 49,50)."

Regarding claim 17 Qian does not teach the limitation of wherein the target subject matters include human flesh, clear blue sky, lawn grass, snow fields, and water bodies, but does suggest a set of objects, which can be anything.

Jamzadeh teaches objects as shown in fig. 9, label:"OBJECTS...) as taught by Qian and the method claimed in claim 2, wherein the target subject matters (Figure 9 label: IMAGE SUBJECT) include human flesh (Figure 9 label: IMAGE SUBJECT include human flesh as represented in fig. 9, label: IMAGE SUBJECT COLOR (SUBJECT).), clear blue sky, lawn grass, snow fields, and water bodies (Figure 9 label: IMAGE SUBJECT include human flesh as represented in fig. 9, label: IMAGE SUBJECT COLOR (SUBJECT) and clear blue sky, lawn grass, snow fields, and water bodies represented in fig. 9, label: NATURE SCENERY.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian's teaching of a set of objects with Jamzadeh's teaching of Fig. 9, labels:IMAGE SUBJECT and NATURE SCENERY, because Jamzadeh's teaching are standard objects to one of ordinary skill in the art to detect features of an image.

Regarding claim 4, Qian does not teach the limitation of human flesh, but does teach objects which suggests that an object can be anything.

Jamzadeh does teach objects as taught by Qian and in addition human flesh or "IMAGE SUBJECT COLOR" of fig. 9 that corresponds to "PEOPLE (PERSON)" of fig. 9 which is in the same category of "OBJECTS CAR, HOUSE, ETC".

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian's object teaching with Jamzadeh's teaching of IMAGE SUBJECT COLOR, because Jamzadeh's teaching will identify a portrait image from other images; thus, a user does not have to manually sort through a group of images to find a portrait image as mentioned from col. 6, line 62 to col. 7, line 8.

Regarding claim 5, Qian does not teach the limitation of clear blue sky, but does teach objects which suggests that an object can be anything.

Jamzadeh does teach objects as taught by Qian and in addition NATURE SCENERY as shown in fig. 9, which is in the same category of "OBJECTS CAR, HOUSE, ETC".

It would have been obvious at the time the invention was made to one of ordinary skill in the art to Qian's object teaching with Jamzadeh's teaching of NATURE SCENERY for the same reasons as claim 4.

Claims 6-8 are rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claims 6-8.

12. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maurer et al. (US Patent 6,731,821 B1).

Regarding claim 9, Qian discloses the the method claimed in claim 1, wherein the image enhancement operation (Fig. 9, num. 400: image smoother is the enhancement operator.) is sharpening (Fig. 9, num. 400: image smoother is the enhancement operator that smoothes.).

Qian does not teach the limitation of a sharpening, but does teach preserving "sharpness" in col. 5, line 43 using a smoothing operation as shown in fig. 9, num. 400: image smoother and successive image process steps 600 and 500.

Regarding claim 18, the combination of Qian teaches the method of claim 3, wherein the image enhancement operations include noise reduction, JPEG de-blocking, tone scale adjustment, scene balance adjustment, and color remapping in claims 10,14,11,12 and 13, respectively, but does not teach the limitation of sharpening.

However, Maurer et al. does teach an image smoother with successive image process steps as shown in fig. 1, numerals 10,11 as suggested by Qian and teaches claim 21 wherein the characteristic is sharpness (PRESERVING EDGES in fig. 1,num. 10 is a characteristic of sharpness.) and the improvement parameter is a sharpening parameter (Fig. 1, num. 11: SELECTIVELY SHARPEN SMOOTHED IMAGE **I'** USING VARIABLE CONTRAST STRETCHING is the improvement parameter that is a sharpening parameter.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian's teaching of preserving edges and successive image process steps with Maurer et al.'s teaching of PRESERVING EDGES in fig. 1,num. 10 with Maurer et al.'s fig. 1,num. 11: SELECTIVELY SHARPEN SMOOTHED IMAGE **I'** USING VARIABLE CONTRAST STRETCHING, because Maurer et al.'s fig. 1,num. 11: SELECTIVELY SHARPEN SMOOTHED IMAGE **I'** USING VARIABLE CONTRAST STRETCHING "enhance[es] image quality" in col. 2, line 18 and this will help accomplish the goal in Qian of preserving edges.

13. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oian (US Patent 6,707,940 B1) in view of Cubillo et al. (US Patent 6,141,017 A).

Regarding claim 15, Qian does not teach the limitation of claim 15 of image magnification employing interpolation, but does suggest resizing images during a "superpimposition" in col. 6, line 29 operation since a superimposition operation would require resizing one image relative to another to be "displayed on an output device such as a video screen or monitor" in col. 6, lines 41,42.

Cubillo et al. does teach in the title a resizing operation as suggested by Qian and teaches a method, wherein the image enhancement operation is image magnification ("'zoom'" in col. 1, line 24 and shown in fig. 21 and 22 where fig. 21 shows an image 144 that is zoomed in the image 145 of fig. 22.) employing interpolation ("'zoom'" in col. 1, line 24 and shown in fig. 21 and 22 where fig. 21 shows an image 144 that is zoomed in the image 145 of fig. 22 using "interpolation" in col. 1, lines 32,33 and shown in fig. 22. Note that fig. 22 has missing interpolation spots represented as white rectangles due to the zoom operation and is corrected in the image 145 of fig. 23.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian teaching of superimposition and displaying with Cubillo et al.'s teaching of zooming with interpolation, because Cubillo et al.'s teaches "a method for accurately zooming (col. 1, line 53)..." which would achieve the goal of scaling one image relative to another during the superimposition operation of Qian for display.

Regarding claim 16, the combination of Cubillo et al. teaches the method claimed in claim 15, wherein the image interpolation ("interpolation" in col. 1, lines 32,33 and col. 10, lines 58,59.) is selectable ("interpolation" in col. 1, lines 32,33 and col. 10, lines 58,59 is selectable via a "variance" in col. 11, line 13.) between bilinear interpolation ("interpolation" in col. 1, lines 32,33 and col. 10, lines 58,59 is selectable via a "variance" in col. 11, line 13 between "bilinear...inter-polation" in col. 11, lines 19,20.)...

...and fractal based interpolation ("interpolation" in col. 1, lines 32,33 and col. 10, lines 58,59 is selectable via a "variance" in col. 11, line 13 between "bilinear...inter-polation" in col. 11, lines 19,20 and "fractal zoom" in col. 11, line 17 based interpolation.).

14. Claims 22 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian (US Patent 6,707,940 B1) in view of Matsugu et al. (US Patent 6,453,069 B1).

Regarding claim 22, Qian teaches the method of claim 1, further comprising:

a) the step of reducing the resolution of the digital image prior to applying the subject matter detector.

Qian does not teach the limitation of claim 22, but does suggest resizing images during a "superpimposition" in col. 6, line 29 operation since a superimposition operation would require two images as shown in fig. 4, labels "original image" and "background image" of the same size.

Matsugu et al., in the similar field of endeavor of determining objects with an image, teaches two images of the same size obtained using a "normaliz[ation]" in col. 25, line 9 operation.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Qian's "original image" and "background image" with Matsugu et al.'s "normaliz[ation]," because Matsugu et al.'s "popular" in col. 1, line 55 "normaliz [ation]" in col. 1, line 60 method of two images allows for "identifying or recognizing a specific object (col. 1, lines 54,55)."

Claim 32 is rejected the same as claim 22. Thus, argument similar to that presented above for claim 22 is equally applicable to claim 32.

Allowable Subject Matter

15. Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 24 is allowed over the prior art because the prior art does not teach the limitation of enhancing the control signal based on size. The closest prior art Qian teaches size that is classified in figure 7. Another prior art Jamzadeh (US Patent 5,523,849 A) teaches a control signal as shown in figure 2, label: BOOST OR ATTENUATION CONTROL COMMAND that is enhanced via a "K" value because it can vary based on the kind of image as shown in fig. 5 which has nothing in common with size. In addition, Jamzadeh of the '849 patent uses interpolation and the above mentioned control signal; however, no direct connection or relationship could be made.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario whose telephone number is (571) 272-7397. The examiner can normally be reached on 6-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DR
Dennis Rosario
Unit 2621